

In re: Shin-Ae Lee et al.  
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### REMARKS

Applicants submit the present *Amendment* in response to the Official Action dated June 27, 2005. Applicants have amended Claims 1, 4, 5 and 6 in response to the Official Action, and have added new Claims 54-55. Applicants submit that, as amended, the pending claims are patentably distinct over the cited art. Additionally, as discussed below, Applicants respectfully submit that withdrawn Claims 10 and 11 are also now in condition for allowance, as Claims 10 and 11 depend from a patentable generic claim.

#### I. The Comments Regarding the Information Disclosure Statement

Applicants appreciate the acknowledgement of the Information Disclosure Statements filed on February 23, 2004 and February 16, 2005 contained on page 3 of the Official Action. However, the Official Action goes on to state that the "listing of references in the specification is not a proper information disclosure statement." (Official Action at 3). While Applicants do list U.S. Patent No. 6,245,619 in the specification, this reference is also listed on the Information Disclosure Statement filed February 19, 2004. Accordingly, Applicants believe that there are no prior art references disclosed in the specification that have not already been listed on an Information Disclosure Statement that has been considered by the Examiner.

#### II. The Rejections of Claims 1-9 and 12

Claims 1-7, 9 and 12 stand rejected as anticipated by U.S. Patent No. 5,162,884 to Liou et al ("Liou"). (Official Action at 3-5). Claim 8 stands rejected as obvious over Liou in view of U.S. Patent No. 5,468,665 to Lee et al. ("Lee"). (Official Action at 5-7). As noted above, Applicants have amended independent Claim 1 and dependent Claims 4-6. Applicants respectfully submit that the pending claims, as amended, are patentable over the cited art.

As amended, independent Claim 1 recites a MOS transistor having an inverted T-shaped gate electrode that includes "a silicon base portion and a silicon column portion extending from the base portion, the base portion and the column portion doped with a same dopant material." While Liou discloses a device that includes an inverted T-shaped electrode, the base and column portions of the gate electrode of Liou comprise different materials.

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More particularly, the base portion of the electrode (i.e., lower gate layer 8) is formed of silicon (specifically polysilicon), while the column portion of the gate electrode of Liou (i.e., upper gate layer 10) is formed, for example, of a refractory metal silicide or polysilicon doped with boron so as to be selectively etchable relative to the lower gate layer 8. (See Liou at Col. 5, lines 19-55). Moreover, in contrast to the MOS transistors of Claim 1, Liou specifically teaches that the material used to form the upper gate layer 10 should be a material that may be selectively etched relative to the material of the lower gate layer 8. (Liou at Col. 5, lines 24-32 and Col. 6, line 64 through Col. 7, line 1). Accordingly, not only does Liou not teach or suggest the MOS transistor of Claim 1, Liou specifically teaches away from such a device.

Claims 2-9 and 12 are each patentable for at least the same reasons that independent Claim 1 is patentable over the cited art. Additionally, the following claims are patentable over the cited art for at least the following additional reasons.

Claim 4, as amended, recites that a bottom surface of the insulating gate spacer is on a curing thermal oxide layer. In the Official Action, the spacer 12 of Liou is identified as a curing thermal oxide layer and the spacer 16 is identified as the insulating gate spacer. However, the bottom surface of the spacer 16 is not on the spacer 12. Accordingly, Liou does not teach or suggest the recitation added by Claim 4.

Claim 5, as amended, recites that "a first sidewall of the gate dielectric is aligned with a sidewall of the first lateral protrusion of the gate electrode" and that "a second sidewall of the gate dielectric is aligned with a sidewall of the second lateral protrusion of the gate electrode." While Liou discloses a gate dielectric 6, the gate dielectric extends well beyond the sidewalls of the base portion of the inverted T-shaped gate electrode. Lee likewise does not disclose or suggest aligning the sidewalls of the gate dielectric with respective sidewalls of lateral protrusions on an inverted T-shaped gate electrode. Accordingly, Claim 5 is also independently patentable over the cited references.

Claim 6, as amended, recites that the MOS transistor further includes "a curing thermal oxide layer on the sidewalls of the gate electrode, the first and second sidewalls of the gate dielectric, the second lightly-doped drain region and the second lightly-doped source region. The Official Action cites to the sidewall dielectric spacer 12 of Liou as disclosing

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such a curing thermal oxide layer. (Official Action at 5). However, the spacers 12 of Liou are not disposed on "the first and second sidewalls of the gate dielectric" as recited in Claim 6 – instead the spacers 12 are on the top surface of the gate dielectric 6. Thus, Claim 6 is also patentably distinct over the cited art.

### III. New Claims 54-55 are Patentable

Applicants have added new Claims 54-55, each of which depend directly or indirectly from Claim 1, and hence are patentable for at least the reasons that Claim 1 is patentable over the cited art. Accordingly, Applicants respectfully submit that allowance of Claims 54-55 is also in order.

### IV. Request for Reconsideration of the Withdrawal of Claims 10 and 11

Claims 10-11 have been withdrawn from consideration. (Official Action at 2). As discussed above, independent Claim 1, as amended, is patentable over the cited art. As independent Claim 1 comprises a generic claim, Applicants are also entitled to examination and allowance of dependent Claims 10 and 11, which are directed to specific species included within the genus covered by Claim 1.

Applicants note that the Official Action, citing to MPEP § 806.04(c), states that "the subcombinations are not generic to the combination using the subcombination." (Official Action at 2). Applicants believe that this statement was directed to the withdrawal of Claims 13-22. To the extent that this statement in the Official Action was also directed to the withdrawal of Claims 10 and 11, Applicants note that what MPEP § 806.04(c) states is that a common subcombination is not generic to two different combinations. The example provided in the MPEP is as follows:

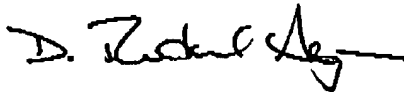
[A] claim that defines only the subcombination, e.g., the mechanical structure of a joint, is not a generic claim or genus claim to two different combinations, e.g., a doughnut cooker and an automobile transmission, each of which utilizes the same form of joint.

MPEP § 806.04(c). Here, Claim 1 clearly is not directed to a subcombination, but to a combination (i.e., to a MOS transistor). Claims 9, 10 and 11, each of which depend from Claim 1, are directed to specific subcombinations of the combination of Claim 1. Generic

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Claim 1 does not recite any material elements that are not included in species Claims 9-11.  
See MPEP § 806.04(d). Thus, MPEP § 806.04(c) has no applicability here, and Claims 10 and 11 should be reinstated and allowed pursuant to MPEP § 806.04(d) and 37 C.F.R. § 1.141.

Respectfully submitted,



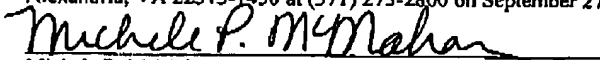
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Date of Signature: September 27, 2005